REMARKS

The following comments are being submitted in response to the Office Action of April 30, 2004. Claims 55-94 are pending and were all finally rejected in the Office Action of April 30. The final rejection was made in a first Office Action in this continuing application. It is submitted that the first Action final is improper in view of the fact that the claims include subject matter not present in the early application. In particular, all the claims in the present application specify that gaps between articles are sequentially adjusted at series of sequentially arranged conveying surface interfaces, or similar such language. This language was not contained in the claims of the patent application. During a telephonic interview with Examiner Valenza on May 26, 2004, it was agreed that Applicant would not contest the designation of the Office Action as a final rejection because Examiner Valenza indicated that he would work with Applicant to put the application into a condition for appeal. In particular, Examiner Valenza agreed that he would not object to the submittal in the present application of the declaration of Mr. Jerry Jakeway, which was originally submitted in the parent application. Enclosed herein is a copy of the Jakeway declaration. During the interview, the undersigned brought to the attention of Examiner Valenza that the Office Action did not include initialed copies of the forms PTO 1449 that accompanied the filing of the application and the Supplemental Information Disclosure Statement filed March 22, 2004. Examiner Valenza stated that the Information Disclosure Statements would be considered upon reconsideration of the application and forms PTO 1449 returned to the attention of the undersigned. An expert declaration of Mr. Jerry Jakeway is being submitted herewith under 37 C.F.R. §1.132 in support of this response. In light of this declaration and the following comments, withdrawal of the claim rejections is requested.

I. 35 U.S.C. §112 Rejections

Claims 55-94 were rejected under an unspecified paragraph of 35 U.S.C. §112 for four different reasons. First, they were rejected because of an allegedly inadequate disclosure regarding possible differences between an upstream conveyor interface, at which a control point may be determined, and a downstream conveyor interface, at which the control point may be utilized for gapping purposes. Second, they were rejected for alleged inadequacy because the gap selector 66, or the step of selecting a gap, was not claimed. Third, claims 59, 69, 79, and 89 were rejected because the specification allegedly contains no disclosure of the invention using assumed control points. Fourth, claims 60, 70, 80, and 90 were rejected

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because the system of the present invention allegedly "determines" control points, rather than "measures" control points. These four rejections are addressed individually below in sections A, B, C, and D, respectively.

A. Applicant Need Not Claim Conveyor Interfaces Having Similar Frictional and Size Characteristics

Pages 2-3 of the Office Action of April 30, 2004, address a number of issues regarding conveyor interfaces. Specifically, these pages suggest that independent claims 55, 65, 75, and 85 are based on an inadequate disclosure because nothing in these claims requires the different conveyor interfaces to have the same frictional characteristics and gap sizes. Page 3 of the last Office Action states that the rejection based on the characteristics of the two conveyor interfaces:

> may simply be addressed by amending the claims to require that the downstream interface has the same conveyor gap as the upstream interface and the surface friction characteristics of the belts at the downstream interface are the same as those at the upstream interface.

Applicant submits that it is not necessary to limit the claims to conveyor interfaces having the same conveyor gap sizes and surface frictional characteristics, not only because this would unduly limit the scope of the claims beyond what is disclosed in the specification, but also because it would impose a requirement that has no legal or factual justification. There are at least five independent reasons why it is not necessary to limit the claims to conveyor interfaces having the same gap and frictional characteristics. These five reasons are discussed individually below in sub-sections 1-5.

1. Having The Same Characteristics at Conveyor Interfaces is Not a Critical Feature of the Invention

Section 2164.08(c) of the Manual of Patent Examining Procedure states that features may be required to be incorporated into the claims if the features are critical. In determining whether an unclaimed feature is critical, however, the entire disclosure must be considered. *Id.* Further, features which are merely preferred embodiments are not to be considered critical. *In re Goffe*, 542 F.2d 564, 567, 191 USPQ 429, 431 (CCPA 1976). The MPEP further provides the following guidance about whether or not an unclaimed feature is critical:

> [a] rejection based on the grounds that a disclosed critical limitation is missing from a claim should be made only when the language of the specification makes it clear that the limitation is critical for the invention to function as intended. Broad language in the disclosure, including the abstract, omitting an allegedly critical feature, tends to rebut the argument of criticality.

Nothing whatsoever in the present application indicates that the frictional characteristics of the conveyor interfaces have to be the same, or that their gap sizes have to be the same. In fact, the present application makes no explicit mention of any requirement for conveyor gap size at one interface vis-à-vis the other interface. Likewise, the present application makes no explicit mention of any requirement of the conveyor frictional characteristics at one interface vis-à-vis the other interface. The specification thus *rebuts* the conclusion that these features are critical. Any assertion that either the conveyor gap sizes or the conveyor frictional characteristics must be the same is therefore legally unfounded. For this reason alone, the requirement to insert language into the claim is incorrect.

2. There Is No Requirement That Applicant Claim Features Directed to an Independent Aspect of the Invention

The rejection for failing to specify similar conveying interfaces is also incorrect because the Applicant is free to claim independent aspects of his invention. The pending application is directed to two separate subsystems that may be utilized independently of each other, or in combination with each other. These two subsystems comprise a control point determination module 38 that accurately determines the location of control points of articles traveling on the conveyor surfaces (p. 5, lines 31-33), and a gap control system 40 that control the gaps between articles on the conveying system by varying the speed of one or more conveyors (p. 6, lines 1-3). As is explicitly stated on page 5 of the application:

> Conveyor induct system 20 comprises two subsystems which can be utilized independently from each other or in combination with each other.

Applicant has therefore made it clear that there is no required link between the two subsystems. They can work with each other, or independently of each other. However, the Office Action's requirement that the conveyor interface(s) of the gap control system 40 have the same characteristics (conveyor gap size and friction) as the conveyor interface of the control point determination module 38 imposes an unbreakable connection between the two sub-systems that simply doesn't exist. In essence, this requirement seeks to re-write Applicant's specification and invention in a manner contrary to what Applicant's disclosed.

In one embodiment of the invention disclosed by the Applicant, the control point determination module 38 identifies the location of the control points on articles and passes this information onto the gap control system 40. Gap control system 40 uses this information to help it create the desired gaps between articles. In this embodiment of the invention, control point determination module 38 and gap control system 40 work in combination with each other. However, this is only one of the several embodiments disclosed by Applicant.

In another embodiment, the gap control system 40 works without control point determination module 38. This other embodiment is described on page 14 of the specification (lines 23-27) where it states:

> ...the invention contemplates that such control point information may come from control point determination module 38, or it may come from other sources as well. For example, it would be possible to utilize gap control system 40 wherein the control point information was merely an assumption as to the location of the control point, such as the center point of the article. [Emphasis added].

This disclosure makes it clear that at least one embodiment of the invention uses gap control system 40 without control point determination module 38. The requirement that the claims recite similar conveyor interfaces in both subsystems 38 and 40 limits the claims to the one embodiment in which both subsystems 38 and 40 are present, and unjustifiably precludes Applicant from claiming subsystem 40 by itself. There is no legal or factual basis for preventing Applicant from claiming a properly disclosed embodiment of his own invention.

The four pending independent claims (55, 65, 75, and 85) do not recite any unique features of control point determination module 38 and do not even require a control point determination module. They are therefore written broadly enough to cover both the embodiment with subsystems 38 and 40 working together, and the embodiment with subsystem 40 working by itself. The Office Action's contention that the claims must be written to specify that subsystems 38 and 40 have the same conveyor interfaces characteristics improperly forces Applicant to claim only one of two properly disclosed embodiments. Such a requirement lacks legal or factual support.

The impropriety of the rejection may better be seen by considering an analogous, hypothetical patent application. Suppose an applicant filed an application directed to a new car and a new type of fuel for the car. Suppose still further that the applicant disclosed that the two inventions each had individual merit, and that they could be used either in combination with each other, or separately from each other. In other words, the car could use other fuel, and the fuel could be used with other cars. It would be wrong for an examiner to require the applicant to submit only claims that were limited to the combination of the specific car and fuel disclosed in the application. The applicant would be free to claim the fuel separately from the car, and vice versa. The applicant would also be free to write a claim that was directed to the car only and left unspecified what type of fuel the car used.

This latter type of claim is directly analogous to the present situation. The Applicant here has written four independent claims directed to a gapping control system that leaves unspecified the source of the control point. The control point may come from a system like subsystem 38, or it may come from some other source. The Examiner's rejection improperly forces Applicant to claim both systems in combination—like an examiner forcing an applicant to claim both the fuel and the car. But there is no requirement that an applicant claim features directed to an independent aspect of the invention, and for this additional reason the rejection should be withdrawn.

3. There Is No Requirement That Applicant Claim Only a Theoretically Perfect Embodiment of the Invention

The requirement to amend the claims to limit them to a system with the interfaces of subsystems 38 and 40 being the same is also unwarranted because it relies on another false premise. Specifically, it reflects an incorrect belief that claims have to recite a theoretically perfect embodiment of the invention. Page 3 of the last Office Action states:

> The reliance of the upstream control point determination caused at the first interface with one size conveyor gap, conveyor surface friction characteristics and surface speeds for use in article gap control at a downstream interface with at least one difference in conveyor gap size, speeds or surface friction characteristics introduces error into the article gap control because the control point will change if these interface values are different from those at the first interface.

Even if conveyor interfaces with different characteristics were to introduce error into the system, it is irrelevant. There is no legal requirement that claims recite error-free embodiments. "The mere fact that the system has some drawbacks, or that under certain postulated conditions it may not work...does not detract from the operability of the disclosed equipment to perform its described function." *Decca, Ltd. v. United States*, 544 F.2d 1070, 191 USPQ 439 (Ct. Cl. 1976). *See also Hildreth v. Mastoras*, 257 U.S. 27, 34 (1921) ("The machine patented may be imperfect in its operation; but if it embodies the general principle and works...it is enough."). Thus, the contention that different conveyor interface characteristics may introduce errors, to which Applicant does not acquiesce, can in no way require an applicant to rewrite his claims. The above case law makes clear that even *inoperative* embodiments, which are a lot more objectionable than the operative embodiments with potential errors noted here by the Examiner, cannot justify claim invalidity. "It is well settled that the apparatus disclosed in an application need not necessarily be operative in the exact form in which it is shown and described." *Ex parte Allen*, 2 USPQ2d 1425, 1428 (B.P.A.I. 1987). Whether different conveyor interface characteristics created errors in the system is therefore legally irrelevant—claims simply don't need to recite error-free embodiments.

Further, the specification clearly discloses that the invention may be used in embodiments with varying degrees of accuracy. As noted above, the specification explains that the control point determination module 38 is an optional component of one aspect of the invention and that gap control system 40 may be used in a manner that may create errors. Lines 24-27 of page 14 explicitly state that:

> For example, it would be possible to utilize gap control system 40 wherein the control point information was merely an assumption as to the location of the control point, such as the center point of the article. While such a system would likely be more inaccurate than a system in which the control point was actually measured, gap control system 40 finds equal applicability to such a system.

The disclosure therefore makes it clear that it is not necessary that the location of the control point be 100% accurate. In fact, the control of the gap can be based on a mere assumption as to the location of the control point. Consequently, to the extent different frictional characteristics between the conveyor interfaces might affect the accuracy of the control point determination, this is immaterial to how Applicant has chosen to define the invention in the claims.

There is also no requirement that Applicant limit his claims to exclude impractical situations which a person skilled in the art would know not to practice. For example, the

Office Action notes on the bottom of page 2 that an article may begin to pivot into the conveyor gap, thereby changing its frictional characteristics with respect to the conveyors. However, a conveyor gap that was sufficiently large to allow an article to pivot into the gap would not normally be used in any practical conveyor system. If the gap is big enough to allow pivoting of an article, then the pivoting corner of the article will bump into the end of the downstream conveyor. This could cause jamming of packages, or other disruptions. Such a wide gap would therefore not likely ever be used in any practical system, such as would be known by one skilled in the art. Applicant is not expected to address all of the potential uses to which an invention may be put, especially ones which would represent abnormal operation conditions. Applicant need not claim a theoretically error-free embodiment of its invention, nor limit his claims to exclude situations that a person skilled in the art would typically avoid. The rejection of the claims should be withdrawn for this additional reason.

4. Applicant is Entitled to Claim Systems in Which the Conveyor Interfaces of Subsystems 38 and 40 are Different

Applicant is also not required to insert claim language specifying that subsystem 38 and subsystem 40 have the same characteristics because Applicant is free to claim embodiments of the invention where these interface characteristics are different. The Office Action states that the claims must be limited to systems in which the interfaces of subsystems 38 and 40 are the same because there is allegedly no description of how the system could operate with different interface characteristics. But this contention, even if true, doesn't justify the rejection. Even if the present application didn't disclose that subsystems 38 and 40 can be utilized in the same system with different conveying characteristics (a contention which Applicant doesn't concede), this is immaterial. Claims do not have to be limited to cover only those methods of operation that are explicitly disclosed in an application.

35 U.S.C. §112 does not require that a claim exclude coverage to subject matter that operates in a different manner than what is disclosed in the specification. As stated by the Federal Circuit,

> If an invention pertains to an art where the results are predictable, e.g. mechanical as opposed to chemical arts, a broad claim can be enabled by disclosure of a single

> embodiment...and is not invalid for lack of enablement simply because it reads on another embodiment of the invention which is inadequately disclosed.[1]

The present invention is an electro/mechanical invention. It is therefore in a predictable art. Because the claims currently do not recite any limitations about the gap size and frictional characteristics of the conveyor interfaces, they encompass conveyor interfaces that have different sized gaps and frictional characteristics, as well as conveyor interfaces with the same sized gaps and frictional characteristics. The current claims therefore encompass systems which meet the limitations that the Examiner would like to have added to the claims; namely, those systems in which the conveyor interfaces have the same sizes and frictional characteristics. The current claims thus encompass at least one embodiment to which the Examiner does not object.

The *Spectra-Physics* case cited above establishes that this is all that is necessary to approve the claims. As set forth by the Federal Circuit, the fact that the claims also cover embodiments which the Examiner feels are not supported under §112 (a conclusion which Applicant disagrees with) is immaterial. There is no legal precedent requiring claims to recite limitations that *exclude* from their coverage embodiments that are inadequately disclosed, let alone ones which are not in fact inadequately disclosed, but rather only *alleged* to be inadequately disclosed, as is the case here.

More importantly, the use of different conveyor interfaces is clearly disclosed in the pending application because the specification discloses using a control point location that is merely an assumption (page 14, lines 24-27). This means that there might not even be a control point determination module 38 and its associated conveyor interface. Clearly, a non-existent conveyor interface has different characteristics than one that exists. The specification therefore discloses using gapping control subsystem 40 where its conveyor interface(s) is not required to be the same as any other conveyor interface. Applicants are fully entitled to claim this. For this additional reason, the rejection should be withdrawn.

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[1] *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 3 USPQ2d 1737, 1743 (Fed. Cir.), *cert. denied*, 484 U.S. 954 (1987). Though the examiner hasn't specified that the rejection was based on a lack of enablement under 35 U.S.C. §112, Applicant is entitled to claim coverage over systems having different conveyor interface characteristics under any and all of the requirements of 35 U.S.C. §112.

5. The Examiner Hasn't Established a Factual Explanation Why Interfaces 38 and 40 Must Have the Same Characteristics

The rejection of the claims for lack of adequate disclosure is also factually incorrect because the frictional characteristics and conveyor gap sizes at the interface(s) in gapping control subsystem 40 are largely irrelevant. As set forth in the accompanying expert declaration of Mr. Jerry Jakeway, a person skilled in the art would recognize that the speeds of the conveyors in the gapping control subsystem 40 (e.g. the interface of conveyors 24 and 32 in Fig. 1) would be set equal to each other at the time an article transitioned from one conveyor to another. (Jakeway, ¶16). This would be done so as to not alter the article gapping that had been created by gap control system 40. (Jakeway, ¶16). If the speed of the two conveyors 24 and 32 are the same at the point of article handoff, the frictional coefficient differences and belt gap differences with respect to any interface in control point determination module 38 will have no effect at the time of handoff. (Jakeway, ¶16). Any subsequent changes in speed between the two conveyors that may have an effect on the article gapping will very likely be minimal, due to such factors as the inherent limitation on the acceleration of the motors controlling the conveyors. A person skilled in the art would recognize that neither the same frictional characteristics nor the same conveyor gap sizes are required at both of the interfaces for the invention to work. (Jakeway, ¶16).

For any one of the five foregoing reasons, the rejection of the claims for not reciting that the conveyor interfaces of control point determination subsystem 38 and gapping control subsystem 40 are the same is improper. The rejection should therefore be withdrawn.

B. The Claims Do Not Need to Recite Selecting a Gap

Claims 55-94 were rejected for allegedly being incomplete because the selection of a gap between articles is not explicitly recited in these claims. Independent claims 55 and 75, as well as their dependents, however, do not need to recite the step of gap selection because (1) such a requirement would once again preclude Applicant from claiming an embodiment of the invention fully disclosed and supported in the specification, and (2) selecting a gap is not a critical element of the invention and therefore need not be claimed. These two reasons are discussed below in sub-sections 1 and 2, respectively.

Independent claims 65 and 85, as well as their dependents, recite an article sensor assembly that senses multiple gaps between articles at a time. While these claims thus are directed to the subject matter in which multiple gaps are detected, they still do not require the step of gap selection because these claims all include the recitation of identifying a controllable gap. Nothing beyond an identification of a controllable gap is required, as is discussed below in sub-section 3. For all of these reasons, gap selection is not required in any of the pending claims.

1. Claims 55, 75, and Their Dependents are Allowable Because the Specification Clearly Discloses a System that Detects Only a Single Gap and Renders Gap Selection Unnecessary

The specification makes it amply clear that the system of the present invention can operate without ever detecting multiple gaps. The specification explicitly and repeatedly states that only a single gap may be detected by array 62, in which case gap selection clearly is not required because it is not possible. Page 12, lines 21-23 state:

> A gap detector 64 receives the output from array 62 and uses it to determine the gap or gaps between articles that are traveling within the zone of detection of array 62. [Emphasis added.]

Page 12, lines 32-33 further states:

> After gap detector 64 detects the one or more gaps which are within the detection zone of array 62, it passes this information to a gap selector 66. [Emphasis added].

Still further, the last sentence beginning on page 12 states:

> Gap selector 66 chooses which of the gaps detected by detector 64, if there are more than one, to use in the feedback control loop that controls the speed of conveyor 24. [Emphasis added].

All three of the foregoing quotations indisputably disclose that selecting a gap is an optional feature because there may in fact only be a single gap that is detected by array 62. In such cases, gap selection is not performed because there aren't multiple gaps to select from. If Applicant is forced to add the limitation of selecting a gap to the claims, Applicant will be giving up coverage to situations in which only a single gap is detected, which is a situation clearly contemplated and described in the specification. There is no legal or factual basis for requiring Applicant to exclude subject matter disclosed in the specification as part of the invention. For this reason alone, the rejection of claims 55, 75, and their dependents for a lack of gap selection should be withdrawn.

2. Claims 55, 75, and Their Dependents are Allowable Because Selecting a Gap is Not a Critical Component of the Invention

The selection of a gap is clearly not a critical feature of the invention, and its inclusion in the claims can therefore not be required. Selecting a gap is only possible when multiple article gaps are detected by array 62, and detecting multiple gaps will only occur if successive articles are short enough relative to array 62 for two gaps to be detected. However, the specification discloses that the length of array 62 can be varied. This means that in some cases it may not be long enough to ever detect multiple article gaps. Page 12, lines 2-3 of the specification states:

> Array 62 preferably, although not necessarily, extends for a distance equal to the maximum expected length of articles that will be conveyed.

Clearly, if array 62 is shortened enough, it will not be possible to detect multiple gaps, thereby rendering gap selection impossible. An optional element is clearly the antithesis of a critical feature, thus rebutting any notion that gap selection is critical.

Still further, even if the array 62 is not shortened, but is used with its preferred length (that of the maximum expected article length), it is still possible that only a single article gap will be detected. Where two or more successive articles of the maximum expected length pass by array 62, there will not be more than one gap detected by array 62. (Jakeway, ¶11). In such situations, the two successive packages are too large to allow multiple gaps to be detected by array 62. Moreover, in such situations, the step of gap selection is not only not required, but also not possible. Given the fact that at least one embodiment of array 62 will not detect multiple gaps, the step of selecting from multiple gaps is clearly not a critical element of the invention. (Jakeway ¶11). There is therefore no requirement that it be explicitly incorporated into the claims. Claims 55, 75, and their dependents are allowable for this additional reason.

3. Claims 65, 85, and Their Dependents Are Allowable Because Gap Selection is Unnecessary When a Controllable Gap is Identified

As noted above, claims 65, 85, and their dependents specify that multiple gaps are detected by the article sensor assembly at a time. Despite this detection of multiple gaps, selecting a gap is still not required in these claims because these claims already include the recitation that the controllable gap is identified and adjusted. There is therefore no ambiguity about which of the multiple gaps detected is being adjusted—it is the controllable gap. The recitation of identifying the controllable gap renders it unnecessary to recite selecting a gap. Indeed, if the Office Action's requirement of selecting a gap were added to the claims, more confusion would result because then the claims would recite selecting a gap in addition to identifying a gap. This creates the confusing question as to what is the difference between selecting a gap and identifying the gap. It also confusingly implies that identifying a gap involves something different from selecting a gap, and vice versa, yet leaves one pondering what those differences might be. For this reason, claims 65, 85, and their dependents do not need to recite the step of gap selection.

For all of the foregoing reasons, the rejection of claims 55-94 for not including gap selection should be withdrawn.

C. The Subject Matter of Claims 59, 69, 79, and 89 Is Fully Disclosed in the Specification

Claims 59, 69, 79, 89, and their dependents were separately rejected for allegedly covering subject matter not disclosed in the specification. Specifically, these claims recite that the control point is assumed, rather than measured, and the Office Action contends that "there is no original disclosure for the systems of figures 1-3 assuming control points." This is incorrect.

As has been quoted twice above, the specification states at page 14, lines 24-27:

> For example, it would be possible to utilize gap control system 40 wherein the control point information was merely an assumption as to the location of the control point, such as the center point of the article.

Clearly, this original statement from the specification discloses the concept of using an assumed control point, rather than a measured control point. The assumed control point is used by gap control subsystem 40 in the same manner that a measured control point is used. The specification clearly discloses the use of assumed control points and the rejection of claims 59, 69, 79, and 89 for allegedly containing subject matter not described in the original specification is wrong and should be withdrawn.

D. Claims 60, 70, 80, and 90 Are Fully Supported Because the Specification Discloses Measuring Control Points

Claims 60, 70, 80, and 90 were rejected for allegedly being based on an inadequate disclosure because of the terminology used by the Applicant in these claims. Specifically, these claims were rejected because the specification allegedly discloses only the "determination" of control points, not the "measuring" of control points. This is incorrect.

The first definition of the verb form of the term "measure" in Webster's New Universal Unabridged Dictionary[2] says:

> to ascertain the extent, dimensions, quantity, capacity, etc. of, esp. by comparison with a standard.

This definition undeniably covers the operation of control point determination module 38. Control point determination module 38 ascertains the dimension of the control point of an article. In particular, it measures the distance the control point is located from a landmark on the package, such as its leading or trailing edge (page 10, lines 1-15). Stated alternatively, it *ascertains* the distance the control point is located from a landmark on the article, which is another way of saying that it measures the location of the control point.

The specification makes it very clear that the control point is measured. Page 9, lines 26-31 state:

> While in the past the control point was often assumed to be the center of the article, control point determination module 38 actually measures the location of the control point.
> Control point determination module 38 measures the location of an article's control point by monitoring the gap, if there is one, between the trailing edge of article 34d and the leading edge of article 34c... [Emphasis added].

The specification then goes on to explain in further detail how the measurement of the control point is accomplished. This process fits the ordinary and accustomed meaning of the term "measure," and the rejection of claims 60, 70, 80, and 90 because they use the term "measure," or its variants, should be withdrawn. To the extent the Examiner persists in maintaining this rejection, Applicant requests an explanation as to what the Examiner perceives to be the difference between "measuring" and "determining," and something more than a one-sentence declaration as to why Applicant's system "determines" control points rather than "measures" them.

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[2] Barnes & Noble Books, 1996, p. 1192.

II. 35 U.S.C. §103 Rejection Over U.S. Patent No. 4,369,876 Issued to Small

Claims 55-94 were rejected under 35 U.S.C. §103 as being unpatentable over U.S. Patent No. 4,369,876 issued to Small. It should first be pointed out that Applicant believes the Examiner meant to cite 35 U.S.C. §102(b), rather than §103. Applicant believes this for several reasons. First, the Examiner rejected the claims in the parent application four times for allegedly being anticipated by the Small patent, rather than being rendered obvious. Second, the Office Action has not acknowledged that any claim elements of the present application are missing from Small, as would be expected for an obviousness rejection. In fact, the Office Action of April 30, 2004 states:

> Gap measuring means beams 1-47, etc. of Small et al perform the recited steps in claims 75-94 and meet the claimed elements of claims 55-74.

This statement sounds like a §102 rejection, not a §103 rejection. And third, if the Examiner had truly meant to reject the claims for obviousness, rather than anticipation, the last Office Action should not have been made final because Applicant has never had the opportunity to respond to an obviousness rejection in this application or its parent application. For these reasons, Applicant assumes the §103 rejection was supposed to be a §102 rejection, although Small neither anticipates nor renders obvious the subject matter of the pending claims, as discussed below.

The rejection of claims 55-94 for allegedly being anticipated by the Small patent is incorrect because the Small patent fails to teach, disclose, or suggest all of the limitations of the presently pending claims. Each of the four pending independent claims includes the following language, or a slight variant thereof:

> said feedback controller adjusts the speed of the adjustable-speed conveying surface associated with the particular conveying surface interface as a function of a position of at least one article control point with respect to the particular conveying surface interface...

The Small patent not only fails to disclose, teach, or suggest the entire concept of control points, it fails to disclose adjusting the speed of a conveying surface as a function of an article control point. For at least this reason, the Small rejection for all of the pending claims should be rejected.

In addition, the Small rejection of all of the pending claims should be withdrawn because all of the pending claims specify the sequential adjustment of gaps between articles at sequentially arranged conveying surface interfaces, which is not disclosed or suggested by Small. Still further, the Small rejection of independent claims 65 and 85, as well as their dependents, is improper because these claims specify the detection of multiple gaps between articles, which is not disclosed or suggested by Small. For all of these reasons, as discussed in more detail below, the rejection based on the Small patent is improper and should be withdrawn.

A. Small Does Not Disclose Controlling the Speed of Motor 49 as a Function of the Position of Any Control Points

Before proceeding to discuss Small's failure to disclose control points in more detail, it may be helpful to briefly describe the operation of the conveyor system disclosed in the Small patent. The system's operation may best be understood with reference to Figure 20 and the accompanying description starting at column 10, lines 54 and ending at column 14, line 11. The conveying system moves frames 286 and prevents them from bumping into each other on the conveyor system by way of a conveyor spacer assembly 88, whose components are illustrated in Fig. 20. Figure 20 has been reproduced herein and the labels A, B, and C have been added to three different conveyor rollers for purposes of aiding the following discussion.

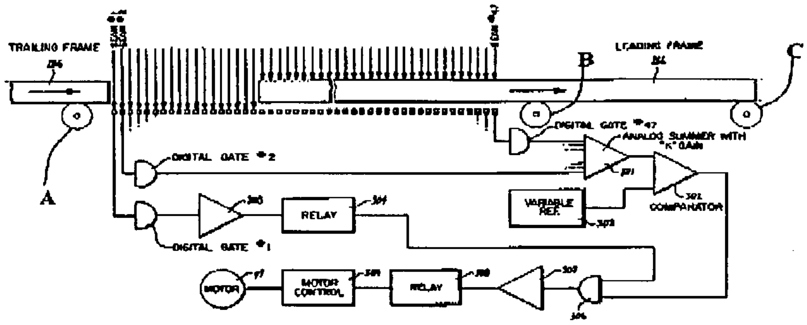

Fig. 20

The circuitry illustrated in Fig. 20 controls the speed of motor 49 which is in turn connected to roller A. Motor 49 thus controls the speed of roller A. Motor 49 operates at one of two different speeds: fast and slow. Rollers B and C, on the other hand, operate at only a single speed: slow. The slow speed of rollers B and C is the same as the slow speed of roller A. The speed of roller A is initially set at the high speed so that the trailing frame 286 is advanced closer and closer to the leading frame 286 (which is moving at the slow speed) until a predetermined spacing is achieved between the two frames. This predetermined spacing is measured by the light beams #2-47. When that predetermined spacing is achieved, roller A is changed to the slow speed, thereby preserving the predetermined spacing until the next frame advances up to conveyor spacer assembly 88. When the next frame reaches spacer assembly 88, the process repeats itself. That is, the trailing frame is advanced at a high speed toward the leading frame until the desired spacing is achieved, and then changed to the slow speed to preserve the desired spacing.

Page 4 of the last Office Action contends that Small discloses all of the elements of the pending claims because "the control point of the articles can be the front or trailing end [of one of the frames]." As noted above, however, the Small patent makes no mention of control points, or any concept similar to control points. To call the leading or trailing edges of the Small frames control points is to arbitrarily apply a label to the frames of Small that doesn't exist in the Small disclosure. While the Small frames may inherently have a control point that defines the moment control transitions from roller A to roller B, any such inherent control point does not mean that Small controls the speed of any rollers as a function of the position of the control points. Quite to the contrary, the Small system is completely oblivious to control points.

If the leading or trailing edges of the frames of the Small system are labeled control points, this raises the question: where are the reference points that these control points have to reach to signify the transition from roller A to roller B? Clearly, the reference point is not the midway point between rollers A and B because whenever a leading or trailing edge of a frame is between rollers A and B, it is resting on only one roller—either A or B—and the transition can only occur when the frame is on both of these rollers. Furthermore, if the frames vary in size, weight, or dimensions, the transition from roller A to roller B may occur at different times for different frames. This means that the reference points are variable and unknown, thereby rendering the arbitrary labeling of the leading or trailing edges of the frames as control points completely meaningless.

While the Small patent discloses a system that may take action based upon the location of the leading and trailing edges of the frames, this action is taken because the positions of the leading and trailing edges of the frames determine the size of the gaps between frames. This action is not taken because the leading and trailing edges are control points. Saying that the leading or trailing edges of the frame could be control points fails to make up for Small's lacking disclosure. Simply adding a label does not create a system that controls the conveyor speed as a function of control points; it merely adds a label that is not acknowledged, utilized, monitored, or acted upon in any fashion whatsoever, whether directly, indirectly, or otherwise, by the Small system. The Small rejection of all of the pending claims should be withdrawn because Small fails to disclose or suggest controlling a conveyor as a function of the location of control points.

B. Small Does Not Disclose Sequentially Adjusting Gaps Between Articles at a Series of Sequentially Arranged Conveying Surfaces

Small also does not anticipate or render obvious any of the claims of the present application because the Small patent fails to disclose, teach or suggest a system that sequentially adjusts gaps between articles at a series of sequentially arranged conveying surfaces. An example of such a sequentially adjusting system is disclosed in the specification at page 15, lines 1-4. The system disclosed in Small uses only a single spacer system 88 to control the spacing between frames. It fails to disclose, suggest, or teach sequential adjustment of gaps between articles. For this additional reason, the rejection of all of the claims in light of the Small patent is improper and should be withdrawn.

C. Claims 65 and 85 Are Also Not Properly Rejected by Small Because Small Does Not Disclose or Suggest Sensing Multiple Gaps

Independent claims 65 includes the following limitation:

> said article sensor assembly adapted to sensing multiple gaps between articles at a time...

Independent claim 85 includes the following limitation:

> sensing with said article sensor assembly multiple gaps between articles at a time,...

The Small patent neither anticipates nor renders obvious the subject matter of claims 65, 85, and their dependents because the Small patent does not disclose or suggest the sensing of multiple gaps between articles. In fact, the Small patent discloses a system in which it is impossible to sense multiple gaps. Light beams #1-47 are positioned between rollers A and B. In order for these light beams to sense multiple gaps, the light beams would have to simultaneously detect both the front and trailing edge of at least one frame. But in order for the light beams to simultaneously detect the front and trailing edge of a frame, the frame would have to be floating in thin air between rollers A and B because Small discloses no supports for the frame other than rollers A and B, which are both outside the detectable area of the light beams. Accordingly, the Small patent not only fails to disclose the detection of multiple gaps between articles, it teaches away from such a concept because it discloses a system that renders such detection impossible. For at least this addition reason, claims 65, 85, and their dependents are allowable over the Small patent.

III. Claims 59, 69, 79, and 89 Do Not Contain New Matter

Claims 59, 69, 79, and 89 were separately rejected under 35 U.S.C. §132 for allegedly containing new matter. Page 5 of the Office Action states that "there is no original disclosure for the systems of figures 1-3 assuming control points." As discussed above in section I-C, page 14, lines 24-27 of the specification provide clear and full support for the system assuming control points. For the same reasons discussed in section I-C above, this rejection should be withdrawn.

IV. Obviousness-Type Double Patenting

Claims 55-94 were also rejected under the judicially created doctrine of obviousness-type double patenting in light of the parent application that has now issued as U.S. Patent No. 6,629,593. Applicant has submitted herewith a signed terminal disclaimer that overcomes this rejection. Accordingly, this rejection should be withdrawn. Please charge the Terminal Disclaimer Fee and any additional fees to Deposit Account No. 22-0190.

V. Additional Comments

It is not clear from the last Office Action how many independent §112 rejections the Examiner intended to make. While Applicant believes the foregoing discussion has addressed all of the independent §112 rejections, the Office Action included over two pages of discussion of §112 rejections. In that discussion, the Examiner made some comments that, though they may not have formed an independent basis for rejecting the claims, Applicant would like to respond to. First, Applicant would like to respond to the Examiner's comments regarding the gap detector circuitry, and second, Applicant would like to respond to the Examiner's comments regarding non-identical articles.

A. Gap Detector Circuitry

The bottom of page 3 of the last Office Action includes comments stating that the gap selector circuitry allegedly must be very complex, and that the standards and reasoning for selecting a gap are not mentioned in the specification. Applicant believes this statement was inadvertently included in the Office Action as part of the rejections made in the parent application that were incorporated into the Office Action of April 30, 2004. Applicant believes this for several reasons. First, during the interview of April 2, 2003, in the parent application, the Examiner agreed that the gap selector circuitry is adequately described in the specification and that the rejection based on the gap selection circuitry allegedly being inadequately described would be withdrawn. This fact was confirmed by the Examiner's allowance of the parent application, which includes claims reciting the selection of a gap, and which therefore evidences a conclusion that selecting a gap was adequately described in the specification.

Second, the gap control selector 66 is adequately disclosed in the application. Gap detector 64 detects any one or more of the article gaps that are present within the detectable area of sensor array 62 (page 12, lines 14-15). This information is passed from gap detector 64 to gap selector 66 (page 12, line 15). Gap selector 66 simply chooses the one of the detected plural gaps which is controllable based upon the location of the article's control point (page 12, lines 17 and 18). As would be apparent to one skilled in the art from reading pages 12 and 13 of the specification, as well as the rest of specification, a gap is controllable in the illustrated embodiment until the control point of the upstream article that partially defines the gap has reached its corresponding reference point. This control point information may be fed to gap selector 66 from control point calculator 56, as illustrated in FIG. 1. After the control point reaches the reference point, the gap behind the article's trailing edge is then selected as the next gap to control, and so on (page 13, lines 30-31). In the illustrated embodiment, gap selector 66 continues to simply select the next most upstream gap whenever the control point passes its associated reference point. Applicant submits that the logic and/or circuitry necessary to implement this selection would not necessarily be unduly complex and would be well within the skill of a person of ordinary skill in the art based upon the disclosure of this application.

Third, the accompanying declaration of Jerry Jakeway rebuts the conclusion that the gap selector is unduly complex or incompletely described. As set forth in this declaration, the steps for selecting which gap to control are simple. (Jakeway ¶10). The gap to be selected is the downstream-most gap that can still be controlled. (Jakeway ¶9). Determining which gap this is amongst multiple gaps can be accomplished, for example, by simply waiting for the appropriate sensor of array 62 to become unblocked. (Jakeway ¶10). This process is described in more detail in paragraph 10 of the Jakeway declaration. To one skilled in the art, the article gap selection process is fully disclosed in the specification of the present application. (Jakeway ¶9).

For all these reasons, Applicant submits that there can be no independent rejection of the claims based upon any alleged inadequacies in the description of the gap selector.

B. Non-Identical Articles

Page two of the last Office Action raises the issue of non-identical articles vs. identical articles. Specifically, it is contended that issues of friction differences between articles or article's centers of gravity will seriously affect the operation of the equipment if non-identical articles are handled. Applicant wishes to clarify that the handling of articles that vary in size, shape, weight, center of gravity, or other aspects, will not in fact affect operation of the equipment. (Jakeway ¶17). Non-identical articles may have their control points at different relative locations, but this does not change the operation of the system. Notwithstanding variations in size, weight, or other factors, control point module 56 is designed to determine the control point of these various types of articles. (Jakeway ¶14). In fact, if only identical articles were being processed, one could simply shut off control point module 56 after the first article was processed. The invention, however, simply does not require the articles to have identical characteristics. To the extent the Examiner disagrees, Applicant requests an explanation as to how non-identical articles would allegedly affect the operation of the equipment.

In light of all of the foregoing comments, Applicant believes the application is in a condition for allowance and respectfully requests such a notice.

Respectfully submitted,

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